hp StorageWorks
Continuous Access EVA V1.1B

This document provides information about HP StorageWorks Continuous Access EVA not covered elsewhere in user documentation. Individuals responsible for configuring, installing, and using the Continuous Access EVA solution should refer to this document for last-minute content.

For the latest version of these release notes and other Continuous Access EVA documentation, access the HP storage website at http://h18000.www1.hp.com/storage/software.html and navigate to the Continuous Access EVA product page. Click the **technical documentation** link to access the technical support page. Click **manuals (guides, supplements, addendums, etc)** for a list of related documentation.

About this document

This section describes the content reflected in this document including:

- Release notes information
- Intended audience
- Related documentation

Release notes information

These release notes cover the following major topics:

Intended audience

This document is intended for customers who have purchased HP StorageWorks Continuous Access EVA, and for HP authorized service providers responsible for installing, configuring, and maintaining these systems.

Related documentation

In addition to this guide, HP provides the documentation listed below. To obtain these and other related documents, browse to your product from the HP storage website at http://h18006.www1.hp.com/storage/software.html, or go directly to the product link listed below. From there, click the **technical documentation** link. Either a list of documentation is displayed, or you are taken to a technical support page where you can select **manuals (guides, supplements, addendums, etc)**.

For Continuous Access EVA, go to the following link to obtain the listed documents:

http://h18006.www1.hp.com/products/storage/software/conaccesseva/index.html

- *HP StorageWorks Continuous Access EVA V1.1B Design Reference Guide*
- *HP StorageWorks Continuous Access EVA V1.1B Operations Guide*
- *HP StorageWorks Continuous Access EVA V1.1 Getting Started Guide*
- *HP StorageWorks Continuous Access EVA User Interface V1.1A Installation Guide*
- *HP StorageWorks Continuous Access EVA User Interface V1.1A Release Notes*
- *HP StorageWorks Continuous Access and Data Replication Manager SAN Extensions Reference Guide*

For the EVA3000, go to:

http://h18006.www1.hp.com/products/storageworks/eva3000/index.html

For the EVA5000, go to:

http://h18006.www1.hp.com/products/storageworks/enterprise/index.html

For Storage Management Appliances or Command View EVA, go to:

http://h18006.www1.hp.com/products/sanworks/managementappliance/index.html

For SAN design or SAN extensions, go to:

http://h18006.www1.hp.com/products/storageworks/san/documentation.html

What's new

This section summarizes highlights, enhancements, and support requirements of Continuous Access EVA V1.1B. For VCS feature changes affecting the system hardware, refer to the EVA3000 and EVA5000 release notes.

Solution highlights

The following changes to Continuous Access EVA are included in this release:

■   See Table 1 for the hardware and software requirements for specific solution versions of Continuous Access EVA.

Table 1: Continuous Access EVA Compatibility Matrix by Release

Component	Continuous Access EVA V1.0 & 1.0A	Continuous Access EVA V1.1, 1.1A, & 1.1B
EVA3000 storage systems	No	Yes
EVA5000 storage systems	Yes	Yes
Storage Management Appliance software V2.0 with service pack 1a	Yes	No
Storage Management Appliance software V2.1	No	Yes
Continuous Access User Interface V1.0	Yes	No
Continuous Access User Interface V1.1A	No	Yes
Command View EVA V3.0 & V3.0A	Yes	No
Command View EVA V3.1	No	Yes (V1.1 & V1.1A)
Command View EVA V3.2	No	Yes (V1.1B only)
Business Copy EVA V2.1A	Yes	No
Business Copy EVA V2.2	No	Yes
Virtual Controller Software V3.00	Yes	No
Virtual Controller Software V3.01	No	Yes (V1.1 & V1.1A)
Virtual Controller Software V3.02	No	Yes (V1.1B only)

- Added support for 250 GB near-online Fibre Attached Technology Adapted (FATA) drives and 300 GB online drives.
- The number of asynchronous LUNs allowed increased from 12 to 128.

Firmware downgrade

VCS V3.01 or above may come pre-installed on a new Enterprise Virtual Array. If for some reason you must downgrade this storage system to VCS V2.x, you will lose any data when the storage system is uninitialized. Continuous Access EVA is not available in any V2.x release of VCS. Instructions for upgrading and downgrading VCS versions are provided in *HP StorageWorks Enterprise Virtual Array Updating Product Software*, available on the Enterprise Virtual Array documentation website at
http://h18000.www1.hp.com/products/storageworks/enterprise/documentation.html.

Operating system support matrix

Table 2 lists current and historical hardware items and software versions supported by those operating systems compatible with Continuous Access EVA V1.1 and subsequent updates. In all cases the current version is preferred or recommended over earlier versions. Planned migration to the current version should be performed as soon as practical.

Operating systems are listed by vendor in the left column. Each item in the same row, and listed to the right, is supported by that operating system. To use this table, select an operating system and operating system version, then move to the right and select an FCA. Supported FCA firmware is located to the right, followed by the driver and Secure Path versions for the FCA. In the far right column is a brief statement about cluster support for that operating system and version.

Table 2: Operating system support matrix

Operating system	OS version	FCA	Adapter firmware	Adapter driver	Secure Path	Clustering
HP HP-UX	11.0 (32-bit)	A5158A 1Gb PCI A6685A 1Gb HSC A6795A 2Gb PCI	Native	Native	3.0bSP1, 3.0d, or 3.0e	ServiceGuard V11.14 Max: 4 nodes
	11iV1 (64-bit)	A5158A 1Gb PCI A6685A 1Gb HSC A6795A 2Gb PCI	Native	Native	3.0bSP1, 3.0c, 3.0d, 3.0e	ServiceGuard V11.14, V11.15, or V11.16 Max: 4 nodes
		A6826A 2Gb A9782A 2 Gb A9784A 2Gb	Native	Native	3.0c, 3.0d, or 3.0e	
	11iV2 (64-bit)	A6795A 2Gb PCI A6826A 2Gb PCI A9782A 2Gb A9784A 2 Gb	Native	Native	3.0c, 3.0d, or 3.0e	ServiceGuard V11.15.01 or V11.16 Max: 4 nodes
HP OpenVMS	7.2-2 with VMS722_FIBRE_SCSI-V0600	LP8000 or LP9002 (FCA2354)	3.91a1 or 3.92a2	Native	Native	VMSCluster Max: 96 nodes
		LP9802 (FCA2384)	1.00x8 or 1.81a5			
		LP100000 or LP100000DC	1.81a5			
	7.3-1 with VMS731_FIBRE_SCSI-V0600	LP8000 or LP9002 (FCA2354)	3.91a1 or 3.92a2			
		LP9802 (FCA2384)	1.00x8 or 1.81a5			
		LP100000 or LP100000DC	1.81a5			
	7.3-2 with VMS732_FIBRE_SCSI-V0300	LP8000 or LP9002 (FCA2354)	3.91a1 or 3.92a2			
		LP9802 (FCA2384)	1.00x8 or 1.81a5			
		LP100000 or LP100000DC	1.81a5			
HP Tru64 UNIX	5.1a BL21 PK6 5.1b BL22 PK3	LP8000	3.91a1 or 3.92a2	Native	Native	TruClusters Max: 8 nodes
		LP9002 (FCA2354)	3.91a1 or 3.92a2			
		LP9802 (FCA2384)	1.00x8 or 1.81a5			
		LP100000 or LP100000DC	1.81a5			

Table 2: Operating system support matrix (continued)

Operating system	OS version	FCA	Adapter firmware	Adapter driver	Secure Path	Clustering
IBM-AIX	4.3.3, 5.1, 5.2	Cambex 1Gb PCI (PC1000F)	2.02.06	1.5.25.3	2.0d SP2	V5.1 supports HACMP V4.4 V5.2 supports HACMP V4.5
		Cambex 2Gb PCI (PC2000LH)	3.02.10			
Microsoft® Windows NT® (Intel)	4.0 SP6a	LP8000 LP952 (FCA2101)	3.82a1 BIOS 1.60a5	4.81a9	4.0 or 4.0a	NT—2 nodes
			3.82a1 BIOS1.61a2	4.82a14	4.0b or 4.0c SP1	Windows 2000 Server—none
Windows® 2000 Server and Advanced Server (32-bit)	5.0 SP2, SP3, SP4		3.91A1 BIOS1.63a1	4.82a16	4.0b or 4.0c	Windows 2000 Advanced Server—MSCS V1.1 & Oracle 9iRAC; max: 2 nodes
		LP9002DC	3.82a1 BIOS 1.61a2	4.82a9	4.0b	
				4.82a14	4.0b or 4.0c SP1	
Windows Server 2003, Enterprise Edition (32-bit)	6.0 SP1		3.91a1 BIOS 1.63a1	4.82a16	4.0c or 4.0c SP1	Windows Server 2003, Enterprise edition—MSCS & Oracle 9iRAC; max: 4 nodes
		QLA2340 BL20P Mezzanine card (not supported on NT)	1.34	8.2.0.73	4.0b or 4.0c SP1	
		QLA2342 BL20P Mezzanine card (not supported on NT)	1.34	8.2.0.73	4.0b or 4.0c SP1	
		LP9802 (not supported on NT	1.01a2	4.82a16	4.0b or 4.0c SP1	
Microsoft Windows Server 2003 Enterprise Edition (64-bit) and Datacenter (64-bit)	6.0 SP1	LP9802	1.01a2	6-5.00a11	4.0c or 4.0c SP1	Windows Server 2003, Enterprise edition —MSCS & Oracle 9iRAC; max: 8 nodes
Novell NetWare	5.1 SP6 or SP7 6.0 SP3, SP4, or SP5 6.5, 6.5 SP1, or 6.5 SP2	QLA 2340 (FCA2214, formerly named FCA2210)	1.34	6.50y or 6.51	3.0c SP1 or 3.0c SP2	N5.1 supports NCS V1.01 (6 nodes max) V6.0 supports NCS V1.06 (6 nodes max) V6.5 supports NCS V1.7 (12 nodes max) Up to 17 nodes supported via DET

Table 2: Operating system support matrix (continued)

Operating system	OS version	FCA	Adapter firmware	Adapter driver	Secure Path	Clustering
Red Hat Linux (32-bit)	AS/ES 2.1 update 5 AS/ES/WS 3.0 update 1, 2, or 3	QLA 2340 (FCA2214) or QLA 2342 (FCA2214DC) BL20P Mezzanine cards	BIOS 1.33 or 1.34	6.04.00 (native) or 6.06.50	3.0, 3.0a, 3.0b, or 3.0c	Prior to e.25 supports Lifekeeper v4.02 e.25 supports Lifekeeper V4.03[1] e.27 supports Lifekeeper V4.04[2] ServiceGuard 11.14.02 on e27 SMP and e27 enterprise with SP3.0b and 6.06.50 driver
Red Hat Linux (64-bit)	AS/ES 2.1 update 5	A6826A	Native	6.06.50 or 7.0.0	3.0b or 3.0c	None
	AS 3.0 update 2 or 3				3.0c	
Sun Solaris	2.6, 7, or 8[2]	JNI FCI-1063 (32-bit PCI)	3.0.3	2.5.9-03	3.0aSP1, 3.0b, 3.0bSP1, 3.0c, 3.0cSP1, or 3.0d	Sun Clusters V2.2 with Solaris 2.6, 7, and 8 Sun Clusters V3.1 with Solaris 9 Max: 8 nodes
		JNI FC64-1063 (64-bit Sbus)	13.3.7			
		QLA2310 PCI 2Gb (FCA2257P)	FC 1.18.5	3.26		
			FC 3.2.9	4.11		
		QLA2202 Sbus 1Gb (FCA2257S)	FC 1.18.3	3.26		
			FC 2.2.4	4.11		
		QLA2202 cPCI 1Gb[3] (FCA2257C)	FC 1.18.5	3.26		
			FC 2.2.4	4.11		
	9 Build 2	QLA2310 PCI 2Gb (FCA2257P)	FC 1.18.5	3.26	3.0b, 3.0bSP1, 3.0c, 3.0cSP1, or 3.0d	
			FC 3.2.9	4.11		
		QLA2202 Sbus 1Gb (FCA2257S)	FC 1.18.3	3.26		
			FC 2.2.4	4.11		
		QLA2202 cPCI 1Gb (FCA2257C)	FC 1.18.5	3.26		
			FC 2.2.4	4.11		

Table 2: Operating system support matrix (continued)

Operating system	OS version	FCA	Adapter firmware	Adapter driver	Secure Path	Clustering
SuSE Linux (32-bit)	SLES 7, SLES 8	QLA 2340 (FCA2214) or QLA 2342 (FCA2214DC)	BIOS 1.33 or 1.34	6.04.00 or 6.06.50	3.0	Lifekeeper V4.04
	United Linux v1.0 or SLES8 SP2a errata 304				3.0a, 3.0b, or 3.0c	
	SLES 8 SP2a, 2.4.8-64-GB-SMP	QLA 2340 or QLA2342				Above plus ServiceGuard
	United Linux, 2.4.19-64GB-SMP					
SuSE Linux (64-bit)	SLES8: 2.4.19-64GB-SMP	A6826A	BIOS 1.34	6.06.50 or 7.0.0	3.0b or 3.0c	None

1. Lifekeeper V4.03 and V4.04 have the same dual-path restriction as V4.02.
2. If used with 2 Gbps B-series switches, you must use the latest switch firmware (V3.1.1c or 4.1.2b at time of publication).
3. QLA cPCI 1Gb adapter (FCA2257C) is not supported by VCS V3.010 on Solaris 2.6 and 7.

Common platform issues

The following issues have been identified on all operating systems.

Long distance gateway support (updated)

Continuous Access EVA 1.1b is supported in extended SANs (including FCIP and SONET) using the following switch and gateway pairings and with the requirements shown in Table 3 through Table 5:

- B-series switch and HP SR2122-2 gateway

- B-series switch and SAN Valley SL700 or SL1000 gateway

- C-series MDS switch and Cisco IPS8 gateway

- M-series switch and HP SR2122-2 gateway

Table 3: General requirements for long distance gateways

Characteristic	Requirement
Bandwidth	Must be dedicated to storage
Maximum data replication groups	See Table 4 and Table 5 for specific requirements depending on network packet loss ratios, bandwidth, fabric configuration, and intersite latencies
Maximum Transmission Unit (IP networks)	Set to 1500 Bytes
Maximum latency	100 mSec one way (200 mSec round trip)
Average packet loss ratio	0.2% averaged over 24 hours Not to exceed 0.5% for more than 5 minutes in 2 hours
Latency jitter[1]	Not to exceed 10 mSec over 24 hours

[1] Latency jitter is the difference between the minimum and maximum latency observed over a 24-hour period. It is used to characterize networks where latency varies. Jitter is unique to the path; for example, in a ring, jitter for a short path is calculated using the short path, and jitter for a long path is calculated using the long path.

Table 4 and Table 5 show the maximum supported data replication (DR) groups and minimum bandwidth requirements for each switch-gateway pair in low loss and high loss networks. In low loss networks, the average packet loss is less than or equal to 0.0012%. In high loss networks, the average packet loss is less than or equal to 0.2%.

Table 4: Low loss network requirements for long distance switch-gateway pairs

Switch and Gateway Pair	Maximum Data Replication Groups and Minimum Bandwidth	
	For Dual Fabric	For Single or Shared Fabric
B-series and HP SR2122-2	Up to 16 DR groups when bandwidth exceeds 45 Mb/sec	Up to16 DR groups when bandwidth exceeds 90 Mb/sec
B-series and SAN Valley SL700 or SL1000	Up to 16 DR groups when bandwidth exceeds 5 Mb/sec	Up to16 DR groups when bandwidth exceeds 10 Mb/sec
C-series MDS and IPS8	Up to 16 DR groups when bandwidth exceeds 45 Mb/sec Up to 8 DR groups when bandwidth exceeds 10 Mb/sec	Up to16 DR groups when bandwidth exceeds 90 Mb/sec Up to 8 DR groups when bandwidth exceeds 20 Mb/sec
M-series and HP SR2122-2	Up to16 DR groups when bandwidth exceeds 45 Mb/sec	Up to16 DR groups when bandwidth exceeds 90 Mb/sec

Table 5: High loss network requirements for long distance switch-gateway pairs

Switch and Gateway Pair	Maximum Data Replication Groups and Minimum Bandwidth			
	Dual Fabric Maximum Latency		Single or Shared Fabric Maximum Latency	
	0 to 36 mSec	37 to 100 mSec	0 to 36 mSec	37 to 100 mSec
B-series and HP SR2122-2	not supported		not supported	
B-series and SAN Valley SL700 or SL1000	Up to 16 DR groups when bandwidth exceeds 10 Mb/sec Up to 2 DR groups when bandwidth exceeds 5 Mb/sec	Up to 8 DR groups when bandwidth exceeds 60 Mb/sec	Up to16 DR groups when bandwidth exceeds 20 Mb/sec Up to 2 DR groups when bandwidth exceeds 10 Mb/sec	Up to 8 DR groups when bandwidth exceeds 120 Mb/sec
C-series MDS and IPS8	Up to 16 DR groups when bandwidth exceeds 45 Mb/sec Up to 8 DR groups when bandwidth exceeds 10 Mb/sec	Up to 8 DR groups when bandwidth exceeds 60 Mb/sec	16 DR groups when bandwidth exceeds 90 Mb/sec 8 DR groups when bandwidth exceeds 20 Mb/sec	Up to 8 DR groups when bandwidth exceeds 120 Mb/sec
M-series and HP SR2122-2	not supported		not supported	

HP continues to test switch and gateway combinations. Check future releases for expanded support for long distance gateways.

VCS code load restrictions

Before installing VCS V3.02 on storage systems running Continuous Access EVA, you must:

■ Be running VCS V3.010 at a minimum

■ Not be running more than two VCS versions (one of which must be V3.02) in multiple relationships between the source and destination storage systems

■ Suspend DR group replication for the duration of the code load process, even if the intersite links are not available.

■ Perform the code load process under conditions of no leveling and no logging

A code load of one controller forces both controllers on an storage system to reboot. If the controller being upgraded is used as a destination for replication I/O, the source controller logs new I/O while the destination controller reboots. Resume the replication to allow the controller to perform a merge. Wait for the merge to conclude after a code load, or wait three minutes—whichever is longer, before performing the code load on the other storage system in the relationship.

All storage systems involved in a DR relationship must be running with fully functional controllers during a code load. Only two VCS versions are supported at any one time when upgrading a multiple array relationship. For example, three arrays in a relationship cannot have three different VCS versions. If one is running VCS V3.010 and two are running V3.014, upgrade the V3.010 to V3.014, and then start upgrading all to V3.02. HP does not support different VCS versions among controllers in a replicating relationship for a duration longer than a week (168 hours).

Note: Some high performance applications with low time-out thresholds may time out during the code load process. It is recommended that you perform VCS upgrades during periods of minimal activity.

Maximum storage systems and intersite distances

When operating at long delays between Storage Management Appliances and remote Enterprise Virtual Arrays, expect less than optimum performance with management actions such as the creation of DR groups or basic device discovery.

Performance and discovery times scale inversely with the number of arrays, the number of Vdisks in those arrays, and the length of the delay. (Refer to the Distance Versus Array Manageability table in the *HP StorageWorks Continuous Access EVA V1.1B Design Reference Guide*.)

Similarly, when replicating over long distances, either synchronously or asynchronously, it is possible to saturate buffers within the system. This can lead to excessive delays in completing the I/O. When some buffers are full, the controller returns a "device-busy" status to the requesting server and forces the server to time-out the request. Different operating systems respond in different ways, for example, forcing the media offline.

Presenting DR group members to the same FCA

All members of a DR group must be presented to the same FCA on hosts with more than one FCA per fabric (for example, multiple FCA pairs, multiple dual-channel FCAs, or a combination of single and dual-channel FCAs). All DR group members must also be preferred to the same controller with the same failover characteristics.

This restriction is required to keep the DR group members using the same host FCA to EVA path. In the event of a path or controller failure, the members collectively fail over to the other path, thus preserving write order across the members of the DR group.

Switch support

For a list of supported Fibre Channel switches, refer to the *HP StorageWorks SAN Design Reference Guide*. SAN extension products are documented in the *HP StorageWorks Continuous Access and Data Replication Manager SAN Extensions Reference Guide*. These references can be obtained from the SAN Infrastructure webpage at http://h18006.www1.hp.com/products/storageworks/san/documentation.html.

B-series switches

In certain situations, VCS 3.02 does not interact correctly with the following versions of B-series switch code: V3.1.2, V3.1.2a, and V4.2.0. This problem can occur following some inter-switch link disruptions. Until new switch firmware is available, HP strongly recommends that you downgrade the switch firmware to V3.1.1c or V4.1.2b prior to performing the VCS upgrade. All versions of VCS V3.01 and later support these older versions of switch firmware.

When using Qlogic FCAs with Linux, Microsoft Windows, Novell NetWare, or Sun Solaris hosts connected to any B-series switch running version 4.1.0 firmware, there is a possibility that the switch port may indicate 'faulted' during a cold boot of the server. If this happens in any platform except Sun Solaris, go into the switch interface and disable, then re-enable the port. This re-establishes the FCA-to-switch connection. With Sun Solaris, perform a soft reboot of the switch without powering off the server. The switch recognizes the FCA and resumes processing.

Using Qlogic FCAs with B-series switches running version 4.0.2b firmware is known to cause switch reboots.

C-series switches

C-series MDS switches are supported with VCS versions 3.00 and 3.01 on all supported Continuous Access EVA operating systems except for Novell NetWare. Support is available out to 100 msec with either the MDS IP blade or Fibre Channel blade for some IP routers.

M-series switches

Solutions based on M-series switches with intersite delays longer than 100 msec are not supported.

Asynchronous replication with failsafe enabled

Running in asynchronous replication mode with failsafe enabled is not supported. There is no benefit when using these two modes together in normal operation, and doing so may induce LUN instability after the loss of intersite links.

Single path or single FCA configurations

HP supports the use of a host with only one Fibre Channel adapter (FCA) in a configuration, provided that you are using a multipath driver (Tru64 UNIX and OpenVMS) or Secure Path. An exception is IBM AIX, which must use at least two FCAs and Secure Path to provide multipath support. Be advised that a one-FCA configuration introduces a single point of failure, so you should assess your risk tolerance before considering this configuration. Single path configurations using zoning to isolate a single FCA to a single controller port is not supported.

Secure Path dynamic load balancing

Continuous Access EVA does not support using Secure Path dynamic load balancing with any LUN that is a member of a DR group. This applies to all versions of Secure Path.

Inaccessible LUNs upon dual controller reboot

Source LUNs that are members of a DR group are not automatically presented to the host after a dual controller restart with both intersite links down. This is by design, so that the controller can determine the exact source/destination relationship between both copies of the LUNs once the intersite links are re-established; this detects that a failover has occurred to change the source into a destination LUN. To make these same source LUNs visible before the links are restored, assuming that a failover has not occurred, suspend replication of the DR group.

Platform-specific issues

The *HP StorageWorks Continuous Access EVA Design Reference Guide* has been expanded to include a chapter on operating system and application design considerations. Refer to this documentation for information specific to your operating system with Continuous Access EVA.

The following issues have been identified that are specific to an operating system. If your operating system is not listed, there are no pending issues.

HP Tru64 UNIX

The following issues have been identified for HP Tru64 UNIX.

Tru64 UNIX host-to-switch connections

HP strongly recommends that users running HP Tru64 UNIX upgrade to the latest version of 5.1b as soon as practical.

To avoid losing access to the source storage system, connect a Tru64 UNIX host to the same switches as the source storage system.

Directly connect Tru64 UNIX hosts with storage presented by an EVA to the same Fibre Channel switch as that EVA. This configuration prevents an isolated failure mode in which a path failure is not recognized by the Tru64 UNIX multipath driver. If you want to use cascaded switches for larger configurations, contact HP Services for a driver patch to correct this problem. Please reference "T64 Multi-Path Driver Update for Cascaded Switches" for versions 5.1a or 5.1b when contacting your representative.

Tru64 UNIX with M-series switches over FC-IP gateways

Accessing remote storage from a local Tru64 UNIX server using M-Series switches and Fibre Channel-over-IP (FC-IP) gateways is not supported. Tru64 UNIX can only access a Vdisk as long as the server is on the same side of the FC-IP link as the Vdisk.

HP-UX

The following issues have been identified for HP-UX.

Domain ID of 8

When using HP-UX Fiber Channel device drivers, do not configure switches with a domain ID of 8. This configuration is unsupported and will not work. HP-UX systems reserve domain 8 for private loop devices.

Microsoft Windows

The following issues have been identified for Microsoft Windows.

Windows MSCS clusters using multi-member DR groups

There are two restrictions you must follow when using multi-member DR groups with Microsoft Windows clusters:

1. When presenting Vdisks to cluster nodes, present all members of a group to the same set of FCAs. The group cannot be split across multiple sets of FCAs. For example, if all four FCAs in a host need to access an eight-member DR group, then all of the group members can be presented to any two FCAs, or to all four FCAs. However, the group cannot be split with four members presented to two FCAs and the remaining four members presented to the other two FCAs.

2. When making LUN assignments, assign each shared Vdisk the same LUN number on every host. For example, if host A is assigned Vdisk5 as LUN 3, then host B must also be assigned Vdisk5 as LUN 3.

KGPSA-CB FCA with Core Switch 2/64

Windows hosts in Continuous Access configurations can incur a failure with one of the redundant paths when the KGPSA-CB FCAs within that host are directly connected to any B-series switch running version 4.x firmware. When the failure occurs, host I/O continues to the remaining FCA, but the failed path remains unusable until the host is rebooted. Wherever possible, HP recommends connecting the hosts to other switches in the fabric that are not running version 4.x firmware.

Windows 2003 clusters with similar FCAs

Windows 2003 clusters are only supported when all hosts use the same type of FCA. For example, if one host is using KGPSA-CA adapters, then any host in the same cluster must also use KGPSA-CA adapters.

Windows caching

Small files in Microsoft Windows can be held in cache, disrupting replication to the remote controller. Flush all cache files, if possible, before performing a failover. One source of information for flushing data caches on CPU and kernel architecture can be obtained from:

http://msdn.microsoft.com/library/en-us/wcedsn40/html/cgconimplementingcacheflushroutines.asp.

Another option is to use the HP StorageWorks Business Copy EVA application to flush the cache. For more information, go to:

http://h18006.www1.hp.com/products/storage/software/bizcopyeva/index.html.

Booting from the SAN

Booting from the SAN is not supported on 64-bit Windows.

Red Hat and SuSE Linux

Lifekeeper clusters must be zoned so that clustered hosts can only see one controller port per fabric. The operating system host mode of the controller must also be set to "custom."

Sun Solaris

The following issues have been identified for Sun Solaris.

Expanding volumes

The procedure for increasing the volume size of a Vdisk with Command View EVA, as detailed in the *Sun Solaris Kit V2.0 Enterprise Virtual Array Installation and Configuration Guide*, part number AA-RRODB-TE, is not sufficient for VCS V3.01. Use the following procedure instead:

1. Download and install Solstice Disk 4.2.1. You can obtain this utility and get more information and documentation from the Sun website at http://www.sun.com.

2. Create and mount a file system on a Vdisk using the `newfs` and `mount` commands.

3. Write data to the newly created and mounted Vdisk.

4. Unmount the Vdisk.

5. Increase the volume size with the Command View EVA.

6. Open the Solaris *format* utility and select the Vdisk.

7. Perform the `type` command, option 0.

8. Perform the `label` command.

9. Exit the Solaris *format* utility.

10. Perform the `growfs` command. You may need to perform the `label` and `growfs` commands twice.

11. Re-mount the Vdisk and verify that the data written in step 3 is intact.

Transport failure with Solaris 2.6

Whenever a server running Solaris 2.6 loses communication to all four controller ports, the console window displays a "transport failure" message, and the system stops responding or hangs. If this occurs, reboot the server. This error condition does not occur with Solaris 7, 8, and 9.